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09/751,649	12/29/2000	Ashok Singhal	M-8495 US	9244

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EXAMINER	
NGUYEN, STEVE N	
ART UNIT	**PAPER NUMBER**
2133	

DATE MAILED: 03/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/751,649	SINGHAL ET AL.	
	Examiner	Art Unit	
	Steve Nguyen	2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 December 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) *7-9* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☒ Claim(s) *4* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 December 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/20/2001*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-6, drawn to a communication link protocol for communicating between nodes of an interconnect system via a communication link with built in self testing, classified in class 714, subclass 733.

II. Claims 7-8, drawn to a communication link protocol for communicating between nodes of an interconnect system via a communication link with error correcting code, classified in class 714, subclass 746.

III. Claim 9, drawn to a communication link protocol for an interconnect system utilizing packets to transfer data between nodes of the interconnect system, classified in class 709, subclass 218.

The inventions are distinct, each from the other because of the following reasons:

Inventions Group I, Group II, and Group III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention Group I has separate utility such as a communication link protocol with a BIST command for testing the functionality of the communication link. In the instant case, invention Group II has separate utility such as a communication link protocol comprising a bitstream of data comprising error-correcting code bits to correct transmitted bits in error. In the instant case, invention Group III has separate utility such as a

communication link protocol comprising command flags issued to a remote node for incrementing a counter that supports a command queue and for resetting the counter. See MPEP § 806.05(d).

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with David C. Hsai on 3/3/2005 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-6. Affirmation of this election must be made by applicant in replying to this Office action. Claims 7-9 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steve Nguyen whose telephone number is (571) 272-7214. The examiner can normally be reached on M-F, 9am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Steve Nguyen
Patent Examiner
Art Unit 2133

DETAILED ACTION

Claim Objections

1. Claim 4 objected to because of the following informalities: Claim 4 recites the limitation, "a built in self test (BIST) communication issued from a local node to a remote node for testing hardware at the remote node via the communication link." Claim 4 further discloses a link watchdog communication that is identical to the BIST communication. In other words, it is also a communication issued from a local node to a remote node for testing hardware at the remote node via the communication link. The limitations in the claim are ambiguous because it is not clear how the BIST communication is different from the link watchdog communication. Furthermore, page 19, lines 19-21 of the specification contradictorily indicate that the link watchdog tests the software at the remote node, not the hardware. It will be assumed that the applicant intended the link watchdog to test the software at the remote node as detailed in the specification. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. Claims 1 rejected under 35 U.S.C. 103(a) as being unpatentable over Steely, Jr. et al (US Pat. 6,049,889; hereafter referred to as Steely) in view of Grivna (US Pat. 5,850,556).

As per claim 1:

Steely teaches a communication link protocol for communicating between nodes of an interconnect system via a communication link, the communication link protocol comprising:

- a direct memory access (DMA) command for writing a block of data from a local node to a remote node via the communication link (col. 7, lines 26-32);
- an administrative write command for writing data from a local node to registers in a remote node via the communication link for administrative purposes (col. 5, lines 36-45);
- a memory copy write command for writing a line of memory from a local node to a remote node via the communication link when any data is written into that line of memory (col. 6, lines 46-47; col. 7, lines 13-15).

Not explicitly disclosed by Steely is a built in self test (BIST) command for testing the functionality of the communication link. However, Grivna teaches a communication system which uses a BIST testing logic for testing the functionality of the communication link (col. 6, lines 52-56). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine a BIST testing architecture as described by Grivna with the system of Steely to issue a BIST command for testing the functionality of the communication link. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that BIST would have provided the advantage of allowing diagnostics of the communication link, as described by Grivna in column 6, lines 52-56.

As per claim 2:

Steely and Grivna teach the communication link protocol of Claim 1 wherein each command is conveyed between a local node and a remote node in the form of a respective command packet (col. 9, lines 8-9).

As per claim 3:

Steely and Grivna teach the communication link protocol of Claim 2 wherein each respective command packet carries information for at least one command flag (col. 9, lines 18-23; the DV bits are a command flag that dictate the occurrence of an idle cycle).

3. Claim 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Cromer et al (US Pat. 5,850,556) in view of Silva et al (US Pat. 6,163,805).

As per claim 4:

Cromer et al (hereafter referred to as Cromer) teaches a communication link protocol for communicating between nodes of an interconnect system via a communication link, the communication link protocol comprising:

- a built in self test (BIST) communication issued from a local node to a remote node for testing hardware at the remote node via the communication link (col. 6, lines 63-67 and col. 7, lines 1-3; col. 8; a communication is issued in the form of a data packet (Fig. 4A, element 416) for testing the remote node via a communication link. The command can be called a BIST command because the testing of the remote node does not require any external circuitry to facilitate the testing).

Not explicitly disclosed by Cromer is a link watchdog communication issued from the local node to the remote node for testing software at the remote node via the communication link. Silva et al (hereafter referred to as Silva), in an analogous art, teaches testing software at a remote node of a network from a local node via a communication link (col. 4, lines 58-67; Fig. 1).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the software-testing embodiment of Silva with that of Cromer by issuing a link watchdog communication from a local node to a remote node for testing software at the remote node via the communication link. This

modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that the test structure of Silva would have provided the opportunity for a local node to test software at a remote node (col. 4, lines 58-60).

As per claim 6:

Cromer and Silva teach the communication link protocol of Claim 4 as detailed above. Cromer further teaches wherein if the hardware of the remote node is functioning properly, an acknowledge communication is returned from the remote node to the local node in response to the BIST communication (col. 8, lines 6-11).

4. Claim 5 rejected under 35 U.S.C. 103(a) as being unpatentable over Cromer in view of Silva as applied to claim 4 above, and further in view of Phan et al (US Pat. 6,367,042).

As per claim 5:

Cromer and Silva teach the communication link protocol of claim 4 above, but do not explicitly disclose the BIST communication is issued automatically. However, Phan et al teaches that BIST circuitry allows users to periodically test functionality and improve reliability of components (col. 6, lines 15-20).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to automatically issue the BIST commands to test hardware on a periodic basis. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill

in the art would have recognized that BIST circuitry allows users to periodically test functionality and improve reliability of components, as disclosed by Phan in column 6, lines 15-20.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steve Nguyen whose telephone number is (571) 272-7214. The examiner can normally be reached on M-F, 9am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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